Welcome to Oct 6

Learning Goals for tonight

- to be able to calculate surface area and volume of 3D shapes
- to be able to find optimal dimensions for 3D shapes
- to be able to convert between metric and imperial units of measure

Key words for today

surface area	the face of all the shape
volume	the inside area of a shape
dimension	the sides
optimal	Best shape/Biggest
imperial	British System
net	

WARM-UP

1.) Can you find your partner? Match the shape to the name.

2.) Now that you have your shape and the name, can you find the volume of that shape using your formula sheet?

3.) Last, sit with a partner and tell them how to find the volume of your shape.... I'm listening!

Let's do some examples together

1)

Cube

- all sides are 5cm

Volume

$V = l \times w \times h$ or $V = s^3$

$= 5 \times 5 \times 5$ or $= 5^3$

$= 125 cm^3$ $= 125 cm^3$

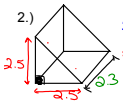
Surface Area

① $A = l \times w$ step 2 6×25

$= 5 \times 5$ $= 150 cm^2$

$= 25$ S.A.

2.)



Surface Area

5 faces

3.45 3.125 5.75

8.05 Hypotenuse

$Hyp^2 = 2.5^2 + 2.5^2$

$Hyp = \sqrt{12.5}$

$= 3.5$

Total: $25.8 cm^2$

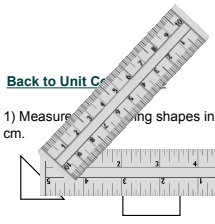
Volume

$V = A_{base} \times h$

$= \frac{(2.5)(2.5)}{2} \times 2.3$

$= 7.2 cm^3$

How many of you tried the surface area and volume handout? Let's try it!!!



Back to Unit C

1) Measure ing shapes in inches and cm.

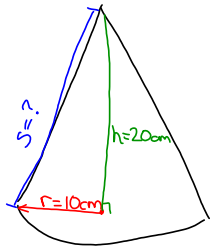
Can we determine how many cm are in an inch?

What if we want area of these shapes? How do we convert the units? Before or after our calculations?

In summary,

Last thing to do tonight... worksheet on optimizing surface area and volume.. talk to your peers and me of course to finish this task before you go home.

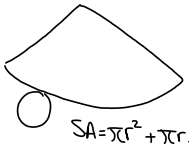
Unit Test on Wednesday.... again no time limit



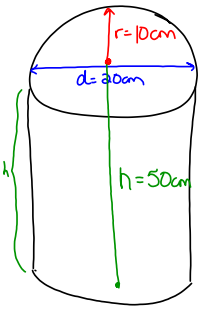
$s^2 = 20^2 + 10^2$
$= 400 + 100$
$= 500$
$s = \sqrt{500}$
$= 22.3$

Volume

$V = \frac{1}{3}\pi r^2 h$
$= \frac{1}{3}(3.14)(10)^2(20)$
$= 2094\ cm^3$



$SA = \pi r^2 + \pi r s$
$= \pi(10)^2 + \pi(10)(22.3)$
$= 1014.73\ cm^2$



Volume

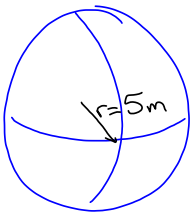
$V = \pi r^2 h$
$= \pi(10)^2(50)$
$= 15707\ cm^3$

Surface Area

628.3

Total:

$2\pi r^2 + 2\pi rh$
$= 2\pi(10)^2 + 2\pi(10)(50)$
$= 628.3 + 3140$
$= 3768$



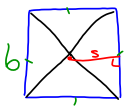
Volume

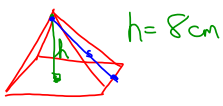
$\frac{4}{3}\pi r^3$
$= \frac{4\pi r^3}{3}$
$= \frac{4\pi(5)^3}{3}$
$= 523\ m^3$

Surface Area

$S.A. = 4\pi r^2$
$= 4\pi(5)^2$
$= 314\ m^2$

SQUARE-BASED PYRAMID

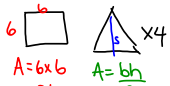




Volume

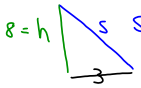
$V = \frac{1}{3}s^2 h$
$= \frac{1}{3}(6)^2(8)$
$= 96\ cm^3$

Surface Area - 5 faces



$A = 6 \times 6$
$= 36$

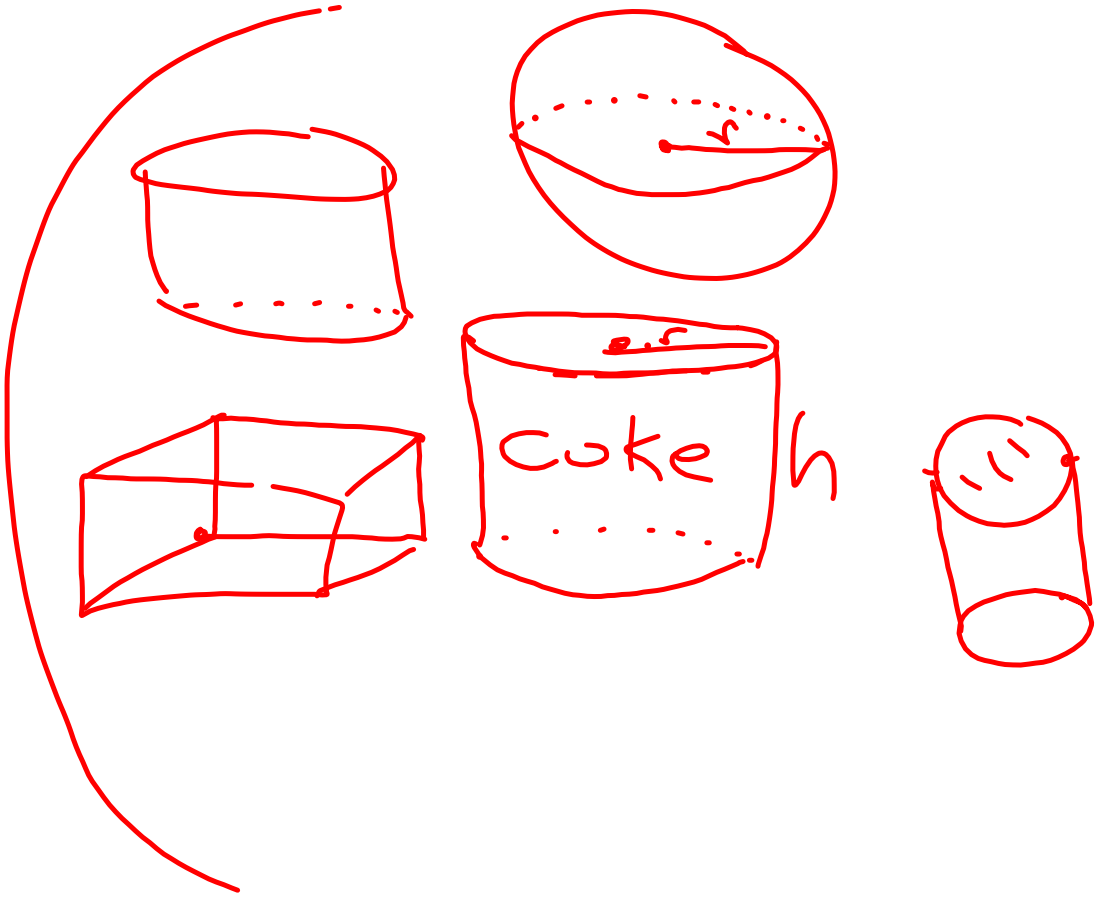
$A = \frac{bh}{2}$
$= \frac{6(5)}{2}$



$s^2 = 8^2 + 3^2$
$= 64 + 9$
$= 73$
$s = \sqrt{73}$
$= 8.5$

$= \frac{6(8.5)}{2}$
$= 25.5$

Total: 25.5×4
$+ 36$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